Exemption No. 4385A

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
SEATTLE, WASHINGTON 98168

In the matter of the petition of

AEROSPATIALE **Regulatory Docket No. 006NM**

for an exemption from § 25.571(e)(2)
of the Federal Aviation Regulations

GRANT OF EXEMPTION

By letter dated May 31, 1989, Mr. D. Berger, ATR Chief Engineer, Societe Nationale Industrielle Aerospatiale, 316, Route de Bayonne, 31060 Toulouse Cedex 03, France, petitioned for an amendment to Exemption 4385 to permit type certification of the Model ATR 72 without showing that the airplane is capable of successfully completing a flight during which likely structural damage occurs as a result of propeller blade impact. Exemption 4385 was granted on April 19, 1984, to permit such type certification of the earlier Model ATR 42. (The exemption was originally identified as Exemption NM-104; however, it was subsequently reidentified as Exemption 4385 for administrative convenience.)

The Model ATR 72, which is being developed jointly with Aeritalia of Italy, is a derivative of the earlier Model ATR 42. Like its forebear, it is a pressurized, high-wing transport powered by two turbopropeller engines. Although the fuselage is seven feet greater in length to accommodate as many as 74 passengers, it too is of metal construction and utilizes construction methods that are similar to those of the Model ATR 42. Like those of the Model ATR 42, the propeller blades of the Model ATR 72 incorporate metal spars with composite outer shell construction.

Aerospatiale has applied for type certification of the Model ATR 72 by the airworthiness authorities of France under the provisions of Joint Airworthiness Requirements - 25 (JAR-25)[1] and by the Federal Aviation

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[1]JAR-25 is a document developed jointly and accepted by the airworthiness authorities of various European countries, including France, for the type certification of large airplanes. JAR-25 is based on Part 25 of the FAR; however there are certain specified differences in the requirements of the two documents.

Administration (FAA) under the provisions of § 21.29 of the Federal Aviation Regulations (FAR) and an existing bilateral agreement with the government of France. Like that of the Model ATR 42, the U.S. type certification basis for the Model ATR 72 consists of Part 25 of the FAR, with Amendments 25-1 through 25-54 thereto; Part 36 of the FAR, with Amendments 36-1 through 36-12 thereto; Special Federal Aviation Regulation No. 27; and any necessary special conditions.

Section of the FAR affected:

> **Section 25.571(e)(2), which was introduced by Amendment 25-45, effective December 1, 1978, specifies that the airplane must be capable of successfully completing a flight during which likely structural damage occurs as a result of propeller blade impact (or as a result of uncontained fan blade impact for a turbofan powered airplane). The requirements of § 25.571(e)(2) are based on the assumption that a propeller blade will fail and therefore allow no relief based on improbability of blade failure. Similarly, the requirements of § 25.571(e)(2) allow no relief based on the possibility that the blade will not impact the structure. The wording of § 25.571(e)(2), together with the preamble to Amendment 25-45, clearly indicates that the rule is concerned only with structural damage due to impact of the failed propeller blade. By omission, other hazards, such as damage to vital systems or structural damage due to severe powerplant imbalance, are not addressed by § 25.571(e)(2).**

Compliance with § 25.571(e)(2) has not been required for any turbopropeller airplane to date. Saab-Scania AB, Empresa Brasileira de Aeronautica (Embraer), de Havilland of Canada, Construcciones Aeronauticas SA (CASA), and British Aerospace have been granted Exemptions 3469, 3722, NM-102, NM-103, and 4812, respectively; and, as noted above, Aerospatiale has been granted Exemption 4385 for their Model ATR 42. As in the case of the Model ATR 42, Aerospatiale has proposed to show compliance of the Model ATR 72 with the following in lieu of § 25.571(e)(2):

> **All practical precautions must be taken to minimize the hazards to the airplane in the event of propeller debris release.**

Although differing somewhat in wording, this proposal is identical in substance to that of each of the other five petitioners.

The petitioner's supportive information in regard to the Model ATR 72 is as follows:

> **In support of the request, the petitioner states that the supportive information submitted by their letter of February 29, 1984, for Exemption 4385 remains valid and applicable to the Model ATR 72. This information, which is presented in detail in Exemption 4385, presents reasons why, in the petitioner's opinion, safety of the Model ATR 42 would not be compromised by granting the requested exemption and doing so would be in the U.S. public interest.**

Summaries of the Saab-Scania, Embraer, and de Havilland of Canada petitions for similar exemptions were published in the *Federal Register*, affording interested persons the opportunity to participate in the rulemaking process by providing comments on each petition. No comments were received concerning either of the last two of those petitions. Because the reasons presented for the CASA petition

were identical in substance to those presented for each of the three earlier petitions for which the public was afforded full opportunity to comment and because granting that petition would not set a precedent, the FAA determined that publication and comment procedures were unnecessary for the CASA petition and the subsequent Aerospatiale and British Aerospace petitions for similar relief. The FAA has determined that publication and comment procedures for this petition are unnecessary for the same reasons.

The FAA analysis/summary is as follows:

> **For reasons discussed in detail in Exemption 4385 for the earlier Model ATR 42, the FAA determined that it would be virtually impossible to assure literal compliance with § 25.571(e)(2) with any economically viable, propeller-driven airplane and that literal compliance with that section would impose an extreme burden without providing a commensurate improvement in safety. On the other hand, compliance with the proposed alternative would, in some respects, result in a higher level of safety. For reasons also discussed in detail in Exemption 4385, the FAA determined that the granting of that exemption would be in the U.S. public interest. The conclusions reached in regard to the Model ATR 42 are all equally applicable to the new Model ATR 72.**

In consideration of the foregoing, I find that amending Exemption 4385 to include the Model ATR 72, as well as the Model ATR 42, would not adversely affect safety and is in the public interest. Therefore, pursuant to the authority contained in Sections 313(a) and 601(c) of the Federal Aviation Act of 1958, as amended, delegated to me by the Administrator, Aerospatiale is hereby granted an amended exemption from § 25.571(e)(2) of the Federal Aviation Regulations to the extent required to permit type certification of the Models ATR 42 and ATR 72 without showing that the airplanes are capable of successfully completing flight during which likely structural damage occurs as a result of propeller blade impact, provided the petitioner shows compliance with the following in lieu thereof:

> **All practicable precautions must be taken to minimize the hazards to the airplane in the event of propeller debris release.**

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